

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

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Date of writing Report

19

When handed in at Local Office

Port of London.

No. in

Reg. Book. Survey held at London Date: First Survey 14th Oct. 1939 Last Survey 13th March 1941

(No. of Visits 7)

on the Refrigerating Machinery and Appliances of the M.V. Empire Pride Tons { Gross
Net

Vessel built at Glasgow. By whom built Barclay Curle & Co. Ltd. Yard No. 680 When built 1941

Owners

Port belonging to

Voyage

Refrigerating Machinery made by J. E. Hall Ltd. Machine Nos. 10433 10434 When made 1941

Insulation fitted by When fitted System of Refrigeration CO₂ + Brine

Method of cooling Cargo Chambers Brine grids Insulating Material used

Number of Cargo Chambers insulated 9 Total refrigerated cargo capacity 12,550 cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed Lower Stk. aft main eng. rm.

Refrigerating Units, No. of 2 No. of machines 2 Is each machine independent yes

Total refrigeration or ice-melting capacity in tons per 24 hours 15 Are all the units connected to all the refrigerated chambers yes

Compressors, driven direct or through ^{single} ~~double~~ reduction gearing. Compressors, single or double acting Single If multiple effect compression

Are relief valves or safety discs fitted yes No. of cylinders to each unit 2 Diameter of cylinders 2 1/8"

Diameter of piston rod 1" Length of stroke 6" No. of revolutions per minute 400

Motive Power supplied from machines driven by direct coupled electric motors.
(State number of boilers, oil engines or electric generators supplying the motive power.)

Steam Engines, high pressure, compound, or triple expansion, surface condensing. No. of cylinders 1 Diameter 1"

Length of stroke 2 1/2" Working pressure 1" Diameter of crank shaft journals and pins 3" journals, 3 1/2" pins

Breadth and thickness of crank webs CO₂ mach. 5" x 1 3/4" No. of sections in crank shaft one Revolutions of engine per minute 400

Oil Engines, type 2 or 4 stroke cycle Single or double acting B.H.P.

No. of cylinders 1 Diameter 1" Length of stroke 6" Span of bearings as per Rule

Maximum pressure in cylinders Diameter of crank shaft journals and pins

Breadth and thickness of crank webs No. of sections in crank shaft Revolutions of engine per minute

AIR RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule

Can the internal surfaces of the receivers be examined What means are provided for cleansing their inner surfaces

Is there a drain arrangement fitted at the lowest part of each receiver If made under survey

No. of Receivers Cubic capacity of each Internal diameter thickness

Seamless, lap welded or riveted longitudinal joint Material Range of tensile strength Working pressure by Rules

Electric Motors, type Enclosed ventilated No. of 2 Rated 33 B.H.P. Kilowatts

Volts at 220 @ 300/400 revolutions per minute. Diameter of motor shafts at bearings

Reduction Gearing Pitch circle diameter, pinion Main wheel Width of face

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings, pinion Main wheel

Pinion shafts, diameter at bearings Main wheel shaft, diameter at bearings

Gas Condensers, No. of 2 (each with 2 casings) Cast iron or steel casings Copper Cylindrical or rectangular cylindrical Are safety valves fitted

to casings yes No. of coils in each casing = 1 Material of coils 1" x 3/4" copper Can each coil be readily shut off or disconnected yes

Water Circulating Pumps, No. and size of pumps available one - 1 1/2" centri. how worked electrically direct Gas Separators, No. of 4

Gas Evaporators, No. of 2 Cast iron or steel casings Steel Pressure or gravity type pressure If pressure type, are safety

valves fitted vent pipe No. of coils in each casing 6 Material of coils 1 1/2" S.D. Steel. Can each coil be readily shut off or disconnected yes.

Direct Expansion or Brine Cooled Batteries, No. of Are there two separate systems, so that one may be in use while the other is being

cleared of snow No. of coils in each battery Material of coils Can each coil be readily shut off or

disconnected Total cooling surface of battery coils Is a watertight tray fitted under each battery

Air Circulating Fans, Total No. of each cubic feet capacity, at revolutions per minute

Steam or electrically driven Where spare fans are supplied are these fitted in position ready for coupling up

Brine Circulating Pumps, No. and size of, including the additional pump 2 - 1 1/2" centrifugal how worked electrically direct.

Brine Cooling System closed or open closed Are the pipes and tanks galvanised on the inside no

No. of brine sections in each chamber 2 in each of the 2 meat rooms, 1 in each of the remaining 7 rooms

Can each section be readily shut off or disconnected yes Are the control valves situated in an easily accessible position yes.

Common
Are thermometers fitted to the outlet and to each return brine pipe *yes* Where the tanks are closed are they ventilated as per Rule
Where the tanks are not closed is the compartment in which they are situated efficiently ventilated *✓*
Are the number and capacity of the machines and the number of pumps and sea connections in accordance with Section 2, Clause 1 of the Rules *yes*
Is the exhaust steam led to the main and auxiliary condensers *✓*

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure.	Air Test Pressure.	Stamped.	REMARKS.
ENGINE CYLINDERS (IF TESTED)						
GAS COMPRESSORS	11-3-41	1000 lb. □	3000 lb. □	1500 lb. □	94	
SEPARATORS	11-3-41	do.	do.	do.	94	
MULTIPLE EFFECT RECEIVERS	4-3-41	do.	do.	do.	94	
CONDENSER COILS	14-10-39	do.	do.	do.	94	
EVAPORATOR COILS	25-2-41	do.	do.	do.	94	
CONDENSER HEADERS AND CONNECTIONS	11-3-41	do.	do.	do.	94	
CONDENSER CASINGS	1-12-39	10 to 15 lb. □	30 lb. □	-	94	
EVAPORATOR CASINGS	13-3-41	20 to 25 lb. □	50 lb. □	-	94	
NH ₃ CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE						
BRINE PIPING AFTER ERECTION IN PLACE						

Have important steel castings and forgings been tested in accordance with the Rules

Cooling Test. Has the refrigerating machinery been examined under full working conditions, and found satisfactory

Dates of test Density of Brine by hydrometer

Temperatures (when the cargo chambers are cooled down to the required test temperatures) of delivery and return air at direct expansion or brine cooled batteries

atmosphere cooling water inlet and discharge & gas in condensers and evaporators

the average temperature of the refrigerated chambers and the rise of temperature in these chambers upon the expiration of

time after the machinery and cooling appliances have been shut off

SPARE GEAR.

Are the working parts of the machines, pumps and motors respectively, interchangeable *yes*

Has the spare gear required by the Rules been supplied *yes*

Additional Spare Gear Supplied:-

6 lubr. piston leathers, 2 Springs for water relief valve, 2 bolts & nuts for conn. rod big end.
6 do. gland do. 2 do. brine do. do. 2 do. do. crosshead.
1 set of 2 leather moulds 2 do. CO₂ relief valve 2 do. do. main bearings
1 liner for each machine 1 oil pump for lubr, 1 CO₂ gauge, 1 hydrometer, 6 safety diodes.
1-1/8" CO₂ valve with 3 spare pipe, 1 pair main bearings, 1 pair conn. rod big end bearings
1 pair crosshead bearings, 1 regulator valve & Springs for spring loaded regulator, 1 set ratchet screws
1 fitted box for compressor parts, 1 spindle & impeller for water and also for brine pumps

ELECTRICAL SPARES.

1 Armature } machine motor
1/2 set field coils } water pump motor
1/2 set interpole coils } brine pump motor
1 set of bearings } F.W. pump motor
1 set of brushes
1 set of brush holders & springs
1 set of controller spares

The foregoing is a correct description of the Refrigerating Machinery.

W. J. Wells Manufacturer.

DESCRIPTION OF INSULATION. (Ship's Stores.)

	IN LOWER HOLD CHAMBERS.					IN TWEEN DECK CHAMBERS.				
	Air Space.	Outer Lining.	Non-conducting Material.	Thickness of ditto.	Inner Lining.	Air Space.	Outer Lining.	Non-conducting Material.	Thickness of ditto.	Inner Lining.
FRAME NO. 40 (Base-Frame)	F					✓	1/2 Cement	Slab Cork	10 1/2"	✓
FRAME NO. 60 (Starb)	F					✓	- do.	- do.	- do.	✓
FRAME NO. 68 (port)	F					✓	- do.	- do.	10" x 12"	✓
FRAME NO.	F									
FRAME NO. (Boiler Room)	F									
FRAME NO. (Engine Room)	F									
FRAME NO.	F									
FRAME NO.	F									
FRAME NO.	F									
FRAME NO. (After Peak)	F					✓	1/2 Cement	Slab Cork	13" port 14" starb	✓
SIDES						✓	- do.	- do.	11 1/2" port 12 1/2" starb	✓
OVERHEADING						✓	1 1/2" asphalt	- do.	9" port 10 1/2" starb	✓
FLOORS OF CHAMBERS										
TRUNK HATCHWAYS						✓	1 1/4" T & G	- do.	9" x 10 1/2"	1/2 Cement
THRUST RECESS, SIDES AND TOP						✓				
TUNNEL SIDES AND TOP						✓				
TUNNEL RECESS, FRONT AND TOP						✓				

FRAMES OR REVERSE FRAMES, FACE

Covered as approved

BULKHEAD STIFFENERS, TOP

BOTTOM

AND FACE

RIBBAND ON TOP OF DECK

SIDE STRINGERS, TOP

BOTTOM

AND FACE

WEB FRAMES, SIDES

AND FACE

BRACKETS, TOP

BOTTOM

AND FACE

INSULATED HATCHES, MAIN

BILGE

MANHOLE

HATCHWAY COAMINGS, MAIN

BILGE

HOLD PILLARS (Tween Deck)

Slab Cork with Galvanized Iron Sheeting.

MASTS

VENTILATORS

Are insulated plugs fitted to provide easy access to bilge suction roses tank, air, and sounding pipes heels of pillars

and manhole doors of tanks Are insulated plugs fitted to ventilators cargo ports and side lights

Is the insulation of the lower hold floor and tunnel top in way of the hatchways protected if so, how

Oil Storage Tanks, where adjacent to the insulated chambers, state what provision has been made for ventilating the air space between the insulation and the bulkhead plating

and for draining the tank top

Fireproof Insulation. Is the insulation and woodwork fireproof in way of bunkers or any surfaces exposed to excessive heat

Where Cooling Pipes pass through watertight bulkheads or deck plating, are the fittings and packing of the stuffing boxes both watertight and fireproof

Cargo Battens, Dimensions and spacing, sides 4 1/2" x 1/8" 4" apart floors 3" x 3/4" 1" apart tunnel top

fixed or portable portable Are screens fitted over the brine grids at chamber sides hinged or permanently fixed

Thermometer Tubes, No. and position in each chamber 1 in each chamber at side near each doorway.

diameter 2 1/2" are they fitted in accordance with Section 3, Clause 8

Protection of Pipes. Are all pipes, including air and sounding pipes, which pass through or into insulated chambers, well insulated

Draining Arrangements. What provision is made for draining the inside of the chambers 2 1/2" Scupper Bell Type

Where sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off

What provision is made for draining the refrigerating machinery room 2 1/2" suction

brine return room fan room water circulating pump room

Are all air spaces behind insulation arranged to drain to the bilges, bilge wells, or gutterways of the respective chambers



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Sounding Pipes, No. and position in each chamber situated below the load water line ✓

Diameter ✓ Are all sounding pipes in way of insulated chambers fitted in accordance with Section 3, Clause 11 ✓

Are all wood linings tongued and grooved ✓ Are cement facings reinforced with expanded steel lattice ✓

How is the expanded metal secured in place ✓

How are the cork slabs secured to the steel structure of the vessel ✓

Air Trunkways in Chambers. Are the arrangements satisfactory and in accordance with the approved plans ✓

Are they permanently fixed or collapsible, or portable ✓

Where air trunkways pass through watertight bulkheads, are they fitted with watertight doors ✓ Are the door frames efficiently insulated ✓

Are insulated plugs supplied for the doorways ✓ Where are the doors worked from ✓

Cooling Pipes in Chambers, diameter 2" Minimum thickness ✓ Are they galvanised externally ✓
How are they arranged in the chambers ✓

Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers ✓

The foregoing is a correct description of the Insulation and Appliances.

J.D. Insulation Company Ltd R.R. Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery and Insulation

Is the Refrigerating Machinery and Appliances duplicate of a previous case If so, state name of vessel

If the survey is not complete, state what arrangements have been made for its completion and what remains to be done

General Remarks (State quality of workmanship, opinions as to class, &c.) The refrigerating machinery was constructed under special survey and the materials and workmanship are good and it will be eligible for the notation + Lloyds R.M.C. (with date) when the installation and testing have been satisfactorily completed.

PARTICULARS TO BE ENTERED IN REGISTER BOOK.

REFRIGERATING MACHINES.					System of (1) Refrigerating (2) Insulating the Chambers.	Ice melting capacity per 24 hours.	Is Refrigerating Machinery Electrically Driven?	INSULATED CARGO CHAMBERS.	
No. of Units.	No. of Compressors.	System.	Makers.	Date of Construction.				No.	Capacity.
2	2	Cash. Aubrey	J. E. Hall Ltd.	1941	(1) Brine	Tons. 15		10	22,550

Fee £ 6 : 0 : 0 Fee applied for, 19
Travelling Expenses £ : : Received by me, 19

D. Genemell.
Surveyor to Lloyd's Register.

Committee's Minute GLASGOW 1 OCT 1941

Assigned SEE ACCOMPANYING MACHINERY REPORT.



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